



State of New Jersey

Department of Environmental Protection

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**CERTIFIED MAIL
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March 17, 2008

Stephen Tappert
TRC Environmental Corporation
57 East Willow St
Millburn, NJ 07041

NOTICE OF DEFICIENCY

Re: Draft Ground Water Operable Unit 1 Design Report
Shieldalloy Metallurgical Corporation
35 South West Blvd, Newfield Borough, New Jersey, 08344
SRP PI# 000297
EA ID #: NOD080001 - 000297

Dear Mr. Tappert:

The New Jersey Department of Environmental Protection (Department) has reviewed the Draft Ground Water Operable Unit 1 (OU1) Design Report (Draft Design Report) for the Shieldalloy Metallurgical Corporation (SMC) site dated February 2007 received on February 5, 2007 and submitted pursuant to the Administrative Consent Order (ACO) executed on February 2, 2006.

Deficiencies

The Department has determined that the Draft Design Report reflects the following deficiencies:

Description of Deficiency: Pursuant to N.J.A.C. 7:26C-Appendix A.XIII(56), failure to comply with the Administrative Consent Order, pursuant to Paragraph 95 of the Administrative Consent Order.

Corrective Actions

You must take the following corrective actions:

479944



Comply with the requirement within 180 days after receipt of this notice to submit the Draft Final Design Report for the Ground Water OU1 that complies with paragraph 34 of the ACO, that is, that provides the details for the implementation of the Selected Remedy documented in the Record of Decision for OU1 dated September 24, 1996 (1996 ROD), including an implementation schedule. [N.J.A.C. 7:26C-Appendix A.XIII56]

Site-Specific Comments

1. The Draft Final Design Report shall also address the following site-specific comments presented below and the enclosed comments from the United States Environmental Protection Agency.
2. Existing Extraction & Treatment System

Page 3-7: Section 3.2.1.2.1. – Ground Water Extraction Wells

In previous sections of the subject report, considerable attention is given to discussions of the treatment system operation and design. However, only one small paragraph discusses the operation of the six ground water recovery wells in relation to the overall system operation. A concern exists regarding the inability of the SMC ground water recovery system to consistently achieve the required 400 gpm pumping rate. The Department has repeatedly expressed this concern in comments on ground water monitoring reports and in meetings between NJDEP and SMC/TRC representatives. Onsite shallow recovery well "Layne" is pumped at an average rate of 25 gpm and onsite deep recovery well "W-9" is pumped at an average rate of 1 to 2 gpm, and often it is not pumped at all. This pumping configuration is inadequate to prevent off-site migration of contaminants, which is unacceptable. Any problems that exist in regard to recovery well construction and efficiency that would prevent the well from being pumped at higher rates shall be identified in this section. In earlier sections of the subject document, it is reported that the current system is capable of operating at 440 gpm, but ground water monitoring reports show that it rarely pumps more than 350-375 gpm. If there are no problems with the recovery wells and they can be operated at significantly higher pumping rates, it shall be explained in the Design Report why SMC/TRC is choosing to allow contaminated ground water to migrate off-site towards recovery wells RW6S, RW6D and RIW2 when it should be cut-off and recovered by on-site recovery wells Layne and W-9.

3. Additional Data Collection

a. Page 4-24 - Field Testing vs. Laboratory Results

It is stated that total chromium results from the spectrophotometer compared favorably with the lab results, however, in review of Figure 4-10 and 4-13 this conclusion is questionable. Differences between field and lab results appear rather significant in many cases, especially in the results from VP-1 through VP-5. Often the results had greater than 100% relative differences. It is certainly recognized that detected levels of total chromium are relatively low, and that 100% difference of a very low number may not be significant. However, it is clear that the two analytical

methods did not correlate well on a percent difference basis. These differences shall be further explained in the Design Report.

b. Page 4-26 - Data Gaps

In the discussion of sampling results, delineation, and data gaps, it must be recognized that sampling points are a considerable distance apart. On a macro scale, delineation may be achieved in some areas, but many data points are a quarter-mile to a half-mile apart. As noted in the report, there are numerous hydraulic influences in the area of the investigation (municipal wells and irrigation wells) that have a definite potential to cause unusual contaminant migration patterns in the subsurface. While rough delineation of the plume may be completed, it is certainly possible that portions of the plume have been missed due to the low frequency of data points. Additional work is proposed to refine contaminant delineation and so this point shall be considered when generating the scope of work.

4. Ground Water Model

a. Page 5-1, Section 5.0 - Ground Water Model Development

It is unclear if a sensitivity analysis was done on the model. If so, the parameters were most sensitive to changes within the model shall be identified in the Design Report. In addition, there appears to be a lack of discussion regarding partial penetration of recovery wells. Does this have an effect on the model? Recovery well RIW2 is the most downgradient recovery well. It is screened at a depth of 30 to 55 feet below ground surface. The aquifer in the area of RIW2 is over 100 feet thick, which means only 25% of the aquifer is screened. Historically, there has been a concern that well RIW2 is inadequate in capturing the deep plume. TRC shall provide a more detailed discussion in the Design Report regarding the screened intervals of the SMC recovery wells and any potential effects it may have on the ground water modeling results.

b. Page 5-4, Section 5.1.6 – Pumping Tests

For the ground water modeling simulations, what values were actually used in the model? For example, the discussion in Section 5.1.6 (Pumping Tests) references aquifer testing conducted by Woodward Clyde in 1974 and unpublished data from 1997 that identify hydraulic conductivity values ranging from 41 ft/day to 83 ft/day, but it is not clear what value was actually used in the modeling. In addition, the 1992 Remedial Investigation Report for the SMC site (TRC 1992) identifies an average hydraulic conductivity value for the site to be 145 ft/day. In the Design Report TRC shall provide more detail regarding what values were used in the modeling, how they were derived (i.e., why was pump test data generated in 1997, but never published?) and why they are the most appropriate values to use.

c. Page 5-4, Section 5.1.7 – Withdrawal Records and Irrigation Well Locations

The effects of irrigation wells and municipal production wells are not incorporated into the model simulations. While it is recognized that collecting data for these wells is often difficult, excluding the wells from the simulations will undermine the effectiveness of the simulations as a predictive tool. Most of the irrigation wells have large capacity pumps. On a basic level, it would be difficult to imagine that

they would not have a significant impact on the aquifer and ground water flow paths during the growing season. In fact, the modeling effort completed by TRC by request of NJDEP in December 2007, shows that the pumping of irrigation wells located north and west of the plant property does impact the ground water and contaminant movement in the aquifer. The pumping of the municipal wells is typically more predictable than irrigation wells, and pumping records should be available to incorporate into the model. As part of the additional design work, the model shall be updated to incorporate all pumping influences in the area of the site. Also, there may be value in running the model with and without the irrigation well influences to estimate conditions present both during the growing season and during the off season.

d. Page 5-11, Section 5.4.1 – Chromium

This section discusses pumping variations and ground water modeling simulations. One simulation was run using the most recent ground water data (September 2007) and recovery well W-9 was pumped at 16 gpm. In review of data from SMC ground water monitoring reports (February 2007 through October 2007) it is apparent that well W-9 was not pumped at all during this 8-month period. While ground water simulations are a good tool for predicting aquifer behavior under pumping conditions, they do not necessarily represent real operating conditions on a day to day basis. As previously mentioned, on-site recovery wells are not operated to prevent off-site migration of contaminants. This pumping configuration shall be changed in the short-term and designed for the long term so that all on-site impact is contained on-site.

5. Proposed Extraction & Treatment Systems

a. Page 7-2: Section 7.2 - Pump and Treat System Operation

It is stated that ground water modeling results indicate the current configuration of pumping wells is adequately capturing the hexavalent chromium plume. It is further stated that some portions of the plume may be beyond the capture zone of the most downgradient wells, however, TRC suggests that chromium in these areas consists of trivalent chromium. The 1996 ROD requires that the remedial action achieve applicable or relevant and appropriate requirements, which specifically identify total chromium, not the individual hexavalent and trivalent forms. These statements shall be revised to provide accurate information or completely removed from the document. In addition, such, the site remedy and all subsequent investigations shall address total chromium, not just the hexavalent form.

b. Page 7-2: Section 7.2.2 – Recommendations for System Improvement

This section also states that the current pumping system is capturing the hexavalent chromium and the bulk of the VOC plume. The only recommendation is for an in-situ program to reduce the hexavalent and VOC concentration and accelerate closure of the site. This recommendation fails to address the requirements of the 1996 ROD and is therefore unacceptable. As stated above, the treatment and recovery systems must be designed to capture and treat all of the total chromium and VOCs attributable to SMC. The Design Report must state how TRC will comply with the 1996 ROD.

c. Page 7-3: Section 7.2.3 – Compliance with 1996 Ground Water ROD

It is stated that the current ground water remediation system has been constructed in accordance with the requirements of the ROD. This is not correct. The current system was constructed in accordance with enforcement documents with technical modifications made over time to attain the requirements of the enforcement documents. Nor is it correctly stated that the system is successfully removing contaminant mass emanating from the SMC site. Current conditions indicate the VOC and total chromium plume is not being totally captured by the recovery system. In addition, the system does not eliminate off-site contaminant migration. These statements shall be revised to provide accurate information or completely removed from the document.

d. Page 7-3: Section 7.2.3 – Compliance with 1996 Ground Water ROD

It is further stated that an in-situ remedial program is planned to accelerate ground water remediation and enhance the capability of the current system to meet remediation goals. Although in-situ remediation may work for this site, it is not part of the 1996 ROD. These statements shall be revised to provide accurate information regarding compliance with the 1996 ROD, or shall be completely removed from the document. Be advised that treatability studies may proceed as a separate issue, and incorporated into the schedule, however, however, a ROD amendment or an Explanation of Significant Differences document will be required prior to implementing such an alternate remedial action.

Note that if deficiencies included herein are not addressed to the Department's satisfaction within the specified time period the Department may assess penalties pursuant to the provisions of paragraph 80 of the ACO. To determine whether the uncorrected deficiencies will be minor with a period of time to correct or non-minor and subject to penalties, refer to the table at N.J.A.C. 7:26C-10.4(c).

If you require copies of Department Guidance Documents or applications, many of these are available on the internet <http://www.state.nj.us/dep/srp>. If you have any questions regarding this matter contact Donna Gaffigan Case Manager, at (609) 633-1494 prior to the date indicated.

Sincerely,



Donna L. Gaffigan, Case Manager
Bureau of Case Management

Enclosure

cc: George Nicholas, NJDEP/BGWPA
Trevor Anderson, USEPA
David R. Smith, SMC
Clerk, Newfield Borough



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JUN 27 2007

JUN 21 2007

Mr. Edward Putnam, Assistant Director
Division of Remediation Management and Response
Remedial Response Element
New Jersey Department of Environmental Protection
P.O. Box 028
401 East State Street
Trenton, New Jersey 08625

Re: EPA Comments on the Draft Groundwater Operable Unit 1 Design Report for the
Shieldalloy Superfund Site

Dear Mr. Putnam:

This is to inform you that the U.S. Environmental Protection Agency (EPA) has completed its review of the February 2007 Draft Groundwater Operable Unit 1 - Design Report for the Shieldalloy Superfund Site. The Design Report (the report) summarizes the results of the groundwater investigation and modeling that were conducted for the site.

EPA's comments on the report are enclosed. Based on our review, it is clear that proper Quality Assurance/Quality Control procedures were not implemented during the groundwater sampling event. EPA is unable to accept much of data collected during the groundwater sampling event due to significant QA/QC problems that are inconsistent with Federal and State QA/QC guidance. TRC must implement proper QA/QC practices at the site and ensure that all future samples are appropriately collected and analyzed.

Also, EPA is concerned that TRC is considering changing the scope of the 1996 Record of Decision to include natural attenuation and in-situ treatment without the appropriate approvals. This is completely unacceptable and inconsistent with the selected remedy.

In addition, the groundwater model did not attempt to determine the impacts the municipal and irrigation wells have on the volatile organic compound (VOC) and the chromium plumes. The groundwater model failed to demonstrate that the pump and treat system will be capable of capturing the contamination found in the deep aquifer.

It is clear that the investigation failed to define the full extent of the groundwater contamination, particular in the vicinity of the Lacroce property and the Farm Parcel. Significant additional groundwater work is needed to define the groundwater contamination. Therefore, TRC must install new wells and resample existing monitoring wells and revise the groundwater model to simulate the influence of irrigation and municipal wells on the groundwater contamination and determine the appropriate

pumping conditions which would allow full capture of the plumes. A work plan describing the necessary additional work must be submitted to NJDEP and EPA for review and comment.

If you should have any questions regarding the above, please contact me or have your staff contact Mr. Trevor Anderson, of my staff, at, (212) 637-4425.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Carole Petersen", with a long horizontal flourish extending to the right.

Carole Petersen, Chief
New Jersey Remediation Branch

cc: Donna Gaffigan, NJDEP
Stephen E. Tappert, TRC

**EPA Comments on the Draft Groundwater Operable Unit 1 Design Report for the
Shieldalloy Superfund Site.**

General Comments

1. It is apparent that proper Quality Assurance/Quality Control (QA/QC) procedures and protocols were not implemented during this groundwater sampling event. Contaminants were present in field, trip, and method blanks, sampling equipment was not properly calibrated prior to the sampling event and many of the groundwater samples were collected from highly turbid environments. It is not possible to assess and to determine the full extent of the groundwater contamination from data that were collected and analyzed using such poor QA/QC procedures and protocols. Proper QA/QC practices must be implemented at the site to ensure that all samples are appropriately collected and analyzed. All groundwater samples should be recollected using proper QA/QC procedures.
2. The groundwater investigation failed to determine the full extent and magnitude of the VOC/chromium plumes. Although, TRC claims that the plumes have been delineated, this is clearly not the case. Large portions of the plume, particularly in the north, northwest, southwest of the site have not been defined. These gaps must be filled before significant additional upgrades to the treatment system are implemented. Additional groundwater investigations, including the collection of additional groundwater samples and modeling, must be conducted to define the full extent of VOC/chromium plumes.
3. The groundwater investigation was limited to a few Vertical Profile (VP) wells. There are other monitoring wells on site. A comprehensive round of groundwater sampling from all wells should be performed. Proper QA/QC protocol must be used during the sampling event.
4. This investigation separates the groundwater contamination into two plumes. While this may be appropriate for the investigation, TRC should make it clear that there are areas of the groundwater contamination where the plumes are intermingled. The final groundwater treatment scheme must treat all site related contamination.
5. TRC implies that it is considering natural attenuation to address of a portion of the plume and in-situ treatment to reduce hexavalent chromium and VOC concentrations to accelerate closure of the site. Not only is this approach premature and unsupported by any data, it is also inconsistent with the selected groundwater remedy for the site, as described in the September 1996 Record of Decision (ROD). The extent of groundwater contamination has not been fully defined. TRC must complete groundwater investigations and implement the groundwater remedy as described in the September 1996 ROD. If TRC proposes to modify the selected remedy, they should obtain permission from NJDEP and

EPA before pursuing any alternate remedies. TRC must provide the reasons why they believe that modification to the remedy would be appropriate. TRC must also propose to collect the necessary data to demonstrate and to support a modification to the remedy. TRC must proceed to implement the selected remedy unless or until NJDEP and EPA determine otherwise.

6. Detailed figures and maps showing the current extent of the VOC/chromium plumes should be included in this document.
7. The groundwater simulation did not incorporate the presence of municipal and irrigation wells in the vicinity of the site. These wells could be influencing the groundwater contaminant plumes, and if so; their influences must be determined and accounted for in the final remedial design for the site. The groundwater simulations proposed in this document must incorporate the municipal and irrigation wells. Also, the groundwater simulations must demonstrate that the pump and treat system will capture all contaminated areas of the deep aquifer.
8. The document proposes additional groundwater investigations in the vicinity of the Lacroce property and the Farm Parcel to define the VOC/chromium plumes. EPA agrees that significant additional groundwater delineation is necessary at this site. A Work Plan outlining and describing this groundwater investigation should be submitted for review and comment.
9. A schedule should be included in this document. The schedule should provide dates and timelines for the initiation and completion of all critical events needed to complete the Remedial Design for the site.

Specific Comments

10. Section 4.1.1.2 – Drilling and Sampling Techniques – Page 4-4 – 5th Sentence – The statement “clay was believed to be encountered” is too vague. Either clay was encountered or it was not. Please clarify.
11. Section 4.1.1.2 – Drilling and Sampling Techniques – Page 4-5 - 2nd Sentence – The statement “after an appropriate volume of water was purged” is vague; please provide the exact volume.
12. Section 4.2.2 – Field Parameters – Page 4-9 – 2nd Paragraph – 1st Sentence – This sentence indicates that water quality parameters tended to stabilize prior to sample collection; however, the meaning of “stabilize fairly well” was not explained. For the low flow sampling technique, stabilization of parameters occurs when three consecutive readings are within $\pm 10\%$ of the initial reading. Samples should be collected once the readings have stabilized. Please explain what is meant by the term “stabilize fairly well”.

13. Section 4.2.2 – Field Parameters – Page 4-9 – 2nd Paragraph – 5th Sentence – The false negative oxidation–reduction potential (ORP) readings observed could have been avoided if the Horiba U-22 was properly calibrated. Please explain what procedures or protocols were in place to insure that all sampling equipment was properly calibrated prior to the start of this sampling event.
14. Section 4.2.2 – Field Parameters – Page 4-10 – 2nd Paragraph – 6th Sentence – This sentence indicates that VP-3, VP-7, and VP-8 were analyzed for ORP using a properly calibrated instrument, however, no information was provided to indicate if VP-1 and VP-2 were re-analyzed for ORP using the properly calibrated instrument. Please indicate if ORP readings for VP-1 and VP-2 were obtained using the properly calibrated instrument. If not, please explain the reasons for not doing so.
15. Section 4.2.2 – Field Parameters – Page 4-10 – 3rd Paragraph – This paragraph indicates that due to calibration issues, groundwater data collected from VP-1 and VP-2 and all QA/QC data for these wells should be considered suspect. Please explain the rationale for including data that are considered suspect into this report and the reason for not re-sampling VP-1 and VP-2. Additional groundwater samples must be collected from VP-1 and VP-2 and the new data must be used to make design decisions instead of the suspected data.
16. Section 4.2.2 – Field Parameters – Page 4-11 – 1st Paragraph – This paragraph indicates that total chromium and Cr⁺⁶ were detected in the field and method blanks at concentrations in excess of the detection limit. This is unacceptable. The data must be rejected. Since method blanks are prepared in the laboratory, any detection of contaminants in these blanks could be an indication that proper quality assurance and quality control (QA/QC) procedures were not implemented in the laboratory. The causes of the contamination in the field and method blank must be identified. Also, please indicate what actions were taken to insure that proper QA/QC procedures were implemented in the laboratory and in the field. Additional groundwater samples must be collected from all VPs where the field and method blanks were found to be contaminated.
17. Section 4.2.3.1 – Volatile Organic Compounds – Page 4-12 - 1st Paragraph – 4th Sentence – This sentence indicates that various “unknown” compounds were detected in the groundwater, however, there were no indications of any attempts to identify these compounds and these “unknown” compounds were not included in Table 4-4 and 4-5. Since these “unknown” compounds could have an adverse impact on the treatment system and the overall quality of the groundwater in the area, these compounds should be identified and their concentrations included in Table 4-4 and Table 4-5.
18. Section 4.2.3.4 – Quality Assurance/Quality Control Samples – Page 4-17 – 1st Paragraph – 2nd Sentence – This sentence indicates that VOC TICs were detected in several field and trip blanks. Over ten (10) TICs were detected in these blanks.

However, no explanation for the presence of these contaminants was provided. The presence of so many contaminants in the field and trip blanks is a clear indication that proper QA/QC procedures were not appropriately implemented during this sampling event. Did the field and trip blanks become contaminated in the field? Or during their transportation to the laboratory? Or during laboratory analysis? This information and a discussion of the QA/QC problems should have been incorporated into the report. Additional samples must be collected from the affected wells.

19. Section 4.3 – Discussion – Page 4-18 - Figures should be included in this document to show the approximate extent of the VOC and the metal plumes.
20. Section 4.3.1.1 - VOC Plume – Page 4-19 – 1st Paragraph – 1st Sentence – This sentence indicates that both the chromium and TCE plumes have been horizontally and vertically delineated. Section 4.3 indicates that future remedial activities will be dependent on the extent of the chromium/TCE plumes downgradient of the Lacroce property and the Farm Parcel. These statements contradict each other. Please clarify. It is clear that groundwater contamination has not been fully delineated. Additional groundwater monitoring wells must be installed and additional samples collected to fully characterize the groundwater contamination.
21. Section 4.3.1.1 – VOC Plume – Page 4-20 – 2nd Paragraph – 1st Sentence – This sentence indicates that the supplemental vertical profiling was unable to delineate the southwest toe of the TCE plume. The purpose of this sampling event was to delineate and to determine the full extent of the plumes emanating from the site. Full delineation of the metals and VOC plumes in the vicinity of the Lacroce's property, the Farm Parcel and areas north, northwest and southwest of the site must be performed. Additional groundwater monitoring wells must be installed and sampled.
22. Section 4.3.1.2 – Chromium Plume – Page 4-21 – 1st Paragraph – 1st Sentence – This sentence indicates that the chromium plume has been delineated because all VP wells containing total chromium at levels below the regulatory level of 70 ppb. Well VP-1 (35-40 bgs) has a chromium (Cr) concentration of 69 ppb. However, this well is 1-1/2 miles downgradient from the Shieldalloy (SMC) facility and is adjacent to the Burnt Mill Pond. This surface water body could serve as a discharge point for the chromium. There are no wells directly upgradient from VP-1, except for VP-4 which is over ½-mile away and is screened at similar intervals. Two additional monitoring wells beyond Burnt Mill Pond must be installed and sampled to confirm that the chromium plume has not migrated beyond the Pond. The monitoring wells should be installed on both sides of West Arbor Avenue, which divides Burnt Mill Pond.

23. Section 4.3.1.2 – Chromium Plume – Page 4-22 – 3rd Paragraph – 4th Sentence – This paragraph indicates that total chromium was detected in the more stable form (Cr^{+3}) and the phenomenon was attributed to the action of the hollow-stem auger. However, no evidence or data were provided to support this conclusion. Although it is plausible that the action of the auger resulted in the more stable chromium, given the extremely high turbid environment, it is also possible that the high solid content of the samples interfered with the analytical results. The conversion of Cr^{+6} to Cr^{+3} must be verified with the appropriate data and evidence.
24. Section 4.3.1.2 – Chromium Plume – Page 4-22 – 3rd Paragraph – 5th Sentence – This sentence indicates that monitoring wells VP-7 and VP-8 exhibited high levels of turbidity with values ranging from 146 – 384 NTUs. Since other wells in this investigation showed relatively low turbidity levels, attributing the high turbidity values to the action of the hollow stem auger is not sufficient to explain the high turbidity levels. The high turbidity values could be an indication that these wells were not developed properly or the wells were not allowed to stabilize before samples were collected. Further, such high turbidity values, indicate that groundwater samples collected may not be representative of the contamination found in the aquifer near VP-7 and VP-8. The data collected from these wells are unacceptable, unusable, and must be rejected. Wells VP-7 and VP-8 must be resampled.
25. Section 4.3.1.2 – Chromium Plume – Page 4-22 – 4th Paragraph – 1st Sentence – The statements that “the VOC plume could not be defined” and “it is likely that significant groundwater diversions are influencing the plume” are not supported with the appropriate evidence and data. The report indicates that there are high capacity wells in the vicinity of the site. Are these wells influencing the plume? The high capacity wells should be sampled. The detection of site-related contaminants in these wells would be an indication that these wells are influencing the plume. If these wells are not contaminated, then one or two new wells should be installed in the vicinity the high capacity wells. These new wells could be used to determine the extent of the groundwater contamination and whether or not the high capacity wells are influencing the groundwater plumes.
26. Section 4.3.2 – Field Testing vs. Laboratory Results – Page 4-23 – 1st Paragraph – 4th Sentence - This sentence indicates that due to complications with instrument calibration, all samples collected from vertical profiling locations VP-1 and VP-2, should be considered suspect. This is unacceptable. Once the complications with the instrument calibration were resolved, field data should have been collected from VP-1 and VP-2. Wells VP-1 and VP-2 must be resampled.
27. Section 4.3.2 – Field Testing vs. Laboratory Results – Page 4-25 – 4th Paragraph - Last Sentence – High turbidity is not only a potential interference with respect to the final field-screened results, but also with laboratory results. Please revise the

sentence to indicate that high turbidity could potentially interference with laboratory results.

28. Section 5.0 – Groundwater Model Development – Page 5-1 – 5th Paragraph – 3rd Sentence - Please explain what is meant by “under a selected set of adjusted parameters”. What parameters were selected for adjustment and why?
29. Section 5.4.1 – Chromium – Page 5.10 – 3rd Paragraph – 2nd Sentence - This sentence indicates that during the particle tracking simulation, adjusting the pumping rate at well RIW2 to 166 gpm and higher accomplished capture of all of the advective pathways from the Cr⁺⁶ plume. This sentence is unclear. What is meant by advective pathways from the Cr⁺⁶ plume? Is this the Cr⁺⁶ contamination emanating from the site or the Cr⁺⁶ contamination within the cone of influence of well RIW2? Does this include the deep aquifer? A detailed analysis and discussion of the results from the particle tracking simulation at 166 gpm should be provided.
30. Sections 5.4.2 – VOC – page 5.11 – 1st Paragraph – Last Sentence - According to the forward particle tracking model, under current pumping conditions, the deep TCE plume is acknowledged as beyond the capture zone of the wells, as presently configured (Figure 5-26). This unacceptable, the current pumping conditions must be modified to capture all (TCE/metal) plumes emanating from the site. Please describe the pumping condition that would allow for the full capture of the TCE/metal plume. In addition, please indicate if additional recovery wells will be installed in the deep zone to assure the capture of the entire plume.
31. Section 5.1.1 – Boring Logs, Radial Search – Page 5.2 – 2nd Paragraph – 1st Sentence – This sentence indicates that a one-mile radius well search was requested around a point. A one-mile radius well search should be performed around the entire site.
32. Section 5.3 – Parameter Estimation and Model Calibration – Page 5-8 – 3rd Paragraph – 4th Sentence - All site related wells, including those used during the simulation should be identified and properly labeled on Figures 5-12 to Figure 5-27.
33. Section 5.5 – Evidence for Off-site Hydraulic Influences - Page 5-11 – 1st Paragraph – 1st Sentence – This sentence indicates that irrigation and municipal wells are not incorporated into these simulations. This is unacceptable. Page 4-22 indicates that it is likely that significant groundwater diversions (i.e. municipal wells, irrigation wells, etc.) are influencing the plumes. The extent of this influence should have been determined during this model simulation. In addition, the data and information needed to incorporate the municipal and irrigation wells into this simulation should have been obtained from the appropriate sources. The simulation should be revised to incorporate all irrigation and municipal wells located in the vicinity of the site.

34. Section 5.6 – Discussion – Page 5-12 – 1st Paragraph – 4th Sentence – Please provide a detailed discussion to explain what is meant by “field observations do not match modeled results”.
35. Section 6.0 – Remedial System Upgrades – The section proposes several upgrades to the existing groundwater pump and treat system. A detailed design specifications report will be needed before the upgrades can be implemented. Further, as discussed throughout this comment letter, significant additional data is needed prior to preparing detailed design specifications. This data must be obtained prior to decisions regarding any upgrades to the treatment plant.
36. Section 7.1.1 – Conclusions and Recommendations – Page 7-1 – 1st Paragraph – 3rd Sentence – This sentence indicates that geochemical data suggests that natural aquifer conditions in the downgradient plume attenuate hexavalent chrome by reducing it to trivalent chromium. Since groundwater samples collected from wells exhibited high turbidity values, it is very difficult to assess the geochemical condition of the aquifer at this time. Therefore, this statement is not supported and should be deleted from this document.
37. Section 7.1.2 – Additional Investigation – Page 7-1 – 1st Paragraph – 1st Sentence – This section indicates that a Remedial Investigation (RI) Work Plan will be prepared for the additional work described in this report. This is inappropriate and confusing. The RI phase of the project was concluded at the signing of the ROD. The site is currently in Remedial Design. All references to RI must be changed to Remedial Design.
38. Section 7.1.2 – Additional Investigation – Page 7-1 – 1st Paragraph – 1st Sentence - In addition to the installation and sampling of new and existing monitoring wells; the required work plan must include a revised model to simulate the influence of irrigation and municipal wells might be having on the groundwater contamination and to determine the pumping conditions which would allow full capture of the plumes. EPA’s comments regarding proper QA/QC must be incorporated into the proposed Work Plan.
39. Section 7.1.2 - Additional Investigation – Page 7-1 – 1st Paragraph – 1st Sentence - A schedule for the submission of the required Remedial Design Investigation Work Plan should be provided. The schedule should include all activities and the critical path needed to complete all investigations at the site.
40. Section 7.2.1 – Effectiveness of Current System – Page 7-2 – This section places a lot of emphasis on hexavalent chromium instead of total chromium, which is the objective of the groundwater remediation. This section should indicate that remediation of total chromium is the main objective of this groundwater remediation.

41. Section 7.2.1 – Effectiveness of Current System – Page 7-2 – This section indicates that the current configuration of pumping wells is adequately capturing the hexavalent chromium plume. EPA strongly disagrees with this assessment. The ongoing pumping configuration is clearly inadequate. A portion of the hexavalent chromium and TCE plumes is beyond the capture zone of the most downgradient recovery wells and migrating toward the southwest of the property, the chromium and VOC plumes have not been fully delineated, and the limited groundwater simulation indicates that the current pumping configuration isn't capturing the contamination within the deep aquifer. This section must be revised to indicate that the current treatment configuration is not capturing the plumes and describe what steps will be taken to complete the delineation of the groundwater contamination and what upgrades will be implemented to the current treatment system to capture the portions of the plumes which are beyond the current pumping configuration.
42. Section 7.2.1 – Effectiveness of Current System – Page 7-2 – 2nd Paragraph – 2nd Sentence – The sentence indicates that TCE concentrations ranging from single digits up to 12 ppb are amenable to natural attenuation. However, no evidence and data were provided to support this conclusion. Monitored natural attenuation is not the selected remedy for remediating the groundwater at the site. TRC must complete the delineation of the groundwater contamination and implement the remedy as described in the September 1996 Record of Decision for the site.
43. Section 7.2.2 – Recommendations for System Improvement – Page 7-2 – 1st Paragraph – 3rd Sentence – This sentence indicates that an in-situ treatment program is being designed to reduce hexavalent chromium and VOC concentrations and accelerate closure of the site. This sentence implies that TRC is in the process of evaluating in-situ treatment for the site. This is unacceptable. TRC has yet to define the full extent and magnitude of the groundwater contamination. SMC has not presented any credible evidence that Monitored Natural Attenuation or any other in-situ alternative would be effective, nor has SMC requested permission from the NJDEP and EPA to begin evaluating remedial options outside the selected remedy. TRC must focus its efforts on implementing the selected remedy for the site. This section must be revised to provide recommendations for completing the delineation to the groundwater plumes and completing the Remedial Design of the selected remedy.